

REPORT OF THE  
BUREAU OF ENGINEERING  
1934-1935

DEPARTMENT OF PUBLIC WORKS S. F.  
JOHN J. CASEY--- CITY ENGINEER

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**Report of the  
Bureau of Engineering**

1934-1935

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**City and County of**  
**San Francisco**  
**JOHN J. CASEY**  
**City Engineer**



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GOLDEN GATE PARK DRIVE

ANNUAL REPORT  
OF THE  
BUREAU *of* ENGINEERING  
OF THE  
DEPARTMENT OF PUBLIC WORKS  
CITY AND COUNTY OF  
SAN FRANCISCO



FISCAL YEAR ENDED JUNE 30, 1935.



ANGELO J. ROSSI

*Mayor*

ALFRED J. CLEARY

*Chief Administrative Officer*

WILLIAM H. WORDEN

*Director of Public Works*

JOHN J. CASEY

*City Engineer*

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# CITY AND COUNTY OF SAN FRANCISCO

## DEPARTMENT OF PUBLIC WORKS

### BUREAU OF ENGINEERING

ADDRESS ALL COMMUNICATIONS TO THE  
CITY ENGINEER

IN YOUR REPLY, REFER TO FILE:

September 30, 1935

Mr. W. H. Worden, Director  
Department of Public Works  
City and County of San Francisco

Dear Sir:

Herewith I transmit the Annual Report of the Bureau of Engineering for the fiscal year ended June 30, 1935.

Construction activity during the year was concentrated on sewer and auxiliary water supply P.W.A. projects, plans for which had been prepared during the previous year. Exceptional progress has been made on this construction. Thirteen sewer projects were under construction, ten of which have been completed, and three are nearing completion. Just before the close of the year, a contract for the construction of Section "B" of the Sixth Street sewer was awarded. The only remaining projects of the P.W.A. Sewer Bond Issue of 1933, for which contracts have not been let, are those for sewage disposal.

The Board of Consulting Sanitary Engineers completed a Report on the Treatment and Disposal of Sewage in May, 1935, and contracts for the necessary structures will be entered into at an early date.

One contract for pipe laying for the P.W.A. Auxiliary Water Supply System has been completed, and another contract is nearing completion. Contracts for the rehabilitation of the Pipe Yard and for the pipes, valves, and fittings, which were stored in the Yard for several years, have been completed. New material is being received daily, and this program will progress rapidly during the coming year.

The only boulevard construction of importance was performed by the California Highway Commission on seven National Recovery Municipal Highway Projects.

VI

These seven projects were completed, with the exception of some minor details.

The report by this Bureau on subways and necessary structures in Market, Geary, and Mission Streets is nearing completion. The plans and estimates of cost have been completed, and the report will be transmitted to you early in the coming year.

Preparation of plans and specifications for the improvement of State Highways within the city, to be financed by the one-quarter cent gasoline tax, has continued throughout the year.

Yours respectfully

*John J. Casey.*  
John J. Casey  
City Engineer

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Sa 52 R  
(1934-35)

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ORGANIZATION AND PERSONNEL

John J. Casey	City Engineer
C. E. Healy	Assistant City Engineer
Wm. C. Pidge City Surveying, Street and Sewer Design and Construction	Assistant Engineer
W. H. Ohmen Special City Projects, Boulevards, Sewers, Bridges, Tunnels, Auxiliary Water Supply System., etc.	Assistant Engineer
J. M. Owens Street Improvement Design	Assistant Engineer
L. R. Mercado Street Improvement Investigation and Permits	Assistant Engineer
E. E. Jordan Street Improvement Assessments, Complaints, etc.	Surveyor
G. F. Stahle Street Grades	Surveyor
H. J. Stahle Surveys	Chief Surveyor
C. L. Cook Chemical and Testing Laboratory	Engineering Chemist
H. B. Chaffee Photography and Blue-printing	Photographer
F. O. Shutts Supervising Construction Projects	Assistant Engineer
C. M. Taylor Supervising Construction Projects	Assistant Engineer
L. Glick Contract Payments	Assistant Engineer

OFFICE ENGINEER

Hackney, F. E.

CIVIL ENGINEERING DESIGNERS

Archer, L. J.	Hanson, J. O.
Bowhay, A. V.	Johnson, M. D.
Callaghan, M. J.	Levy, M. H.
Flaccan, J.	Patterson, C. V.

SANITARY ENGINEERING DESIGNERS

Benas, B.	Phillips, R. L.
	Tegtmeyer, L. G.

ELECTRICAL ENGINEERING DESIGNER

Sandberg, I.

MECHANICAL ENGINEERING DESIGNERS

Buckley, W. N.	Pope, J. P.
Jenkins, A. E.	Sadler, L. B.
Kruger, L. R.	Sanders, J. F.
	Wichman, R. D.

STRUCTURAL ENGINEERING DESIGNER

Swanitz, H. W.	White, John J.
----------------	----------------

HYDRAULIC ENGINEERING DESIGNER

Christensen, V. B.

ASSISTANT MECHANICAL ENGINEER

Oller, J.

SENIOR CIVIL ENGINEERING DRAFTSMEN

Goleman, A. V.	Purser, G. W.
Fanning, C. M.	Reinfeld, H. L.
Newman, N. F.	Rodden, W. P.
Owens, R. H.	Sullivan, F. A.
	Surryhne, R. E.

CIVIL ENGINEERING DRAFTSMEN

Baird, B. A.	Menard, C. W.
Geertz, C. J.	Meyerink, J. O., Jr.
Gillett, A. L.	Slater, J. L., Jr.
Hall, W. B.	Titlow, E. I.
Mannelli, C. J.	Trevor, H. R.
	Whaley, L. C.



JUNIOR CIVIL ENGINEERING DRAFTSMEN

Badgley, G. L.	Levy, S.
Dillon, J. E., Jr.	McKeon, E. F.
Johnson, R. W.	Watson, W. K.

STRUCTURAL DRAFTSMEN

Dannenhower, E. H.	Hitchcock, H. H.
	Snider, E. J.

MECHANICAL DRAFTSMEN

Anaya, Marvin	Matthews, B.
Guida, F.	Petersen, R. L.
	Regan, J. D.

SENIOR CIVIL ENGINEERING INSPECTORS

Duckel, S. P.	Mallon, A. P.
Lewis, F. J.	Muheim, E. F.

CIVIL ENGINEERING INSPECTORS

Anderson, W.	Law, H. J.
Balk, W. S.	Levin, W. S.
Breslin, T.	Merrill, W. S.
Clifton, C. C.	McElroy, J. B.
Crowley, J. J.	McMullin, J. F.
DeCew, L.	Ottman, J. A.
Ducray, J. A.	Partridge, G. J.
Duffy, W. T.	Pope, L. J.
Furderer, A. J.	Rademan, J. A.
Grant, S. A.	Reed, R. B.
Hanly, J. H.	Ryan, D. T.
Heilman, J. S.	Ryan, W.
Huff, C. P.	Sankey, I. A.
Homberger, H.	Scroggy, A. L.
Kazan, J.	Wanderer, W. C.
	West, J. B.

ELECTRICAL ENGINEERING INSPECTOR

Keville, F.

MECHANICAL INSPECTOR

Brophy, J. T.

INSPECTORS OF PUBLIC WORKS CONSTRUCTION

Brown, F.	Keenan, T. J.
Curran, L. T.	McCarthy, P. D.

STREET INSPECTORS

Flynn, A. A.	McCartney, E. E.
Gartland, E. L.	Williams, W. H., Jr.

ASSISTANT CHIEF SURVEYOR

Stern, C. H.

OFFICE SURVEYOR

Cullen, E. J.

SURVEYOR

Coughlan, J. F.	Garen, E. A.
Eggert, W. H.	Jones, C.
Flamm, I.	Lundy, W. T.

SURVEYOR'S FIELD ASSISTANTS

Abrahamsen, A. J.	Hult, D. R.
Banks, R. G.	Kaiser, W. F.
Carlson, S. B.	Lewis, W. A.
Dennis, C. C.	McHugh, R. L.
Farnham, J. W.	Markle, C. O.
Garbarino, A. W.	Miller, G.
Gardiner, C. A.	Miller, H.
Giberson, N. A.	Moroney, T. E.
Grier, R.	Muller, C. J.
Hatman, W. J.	Ronan, T. C.
Hidden, C. S.	Smith, W. A., Jr.
	Williams, P.

PHOTOSTAT OPERATOR

Adami, Henry

ENGINEERING CHEMIST

Bernard, P.

CARTOGRAPHER

Connor, T. E.

BLUEPRINTERS

Dodge, H. B.	Paulson, C. H.
--------------	----------------

GENERAL CLERK-STENOGRAPHERS

Kelly, Adelaide	Sears, Kathryn F.
	Westlund, George

GENERAL CLERK-TYPISTS

Arndt, F. L.	McKee, W.
	Sullivan, M. E.

### DEATHS AND RETIREMENTS

Deaths:

Knox, Fred  
Surveyor

December 4, 1934

Retired for Service:

O'Dowd, P. C. J  
Inspector of Streets and Sewers

July 1, 1934

Schwartz, Israel  
Senior Clerk

May 1, 1935



## BOULEVARDS, STREETS AND HIGHWAYS

As noted in the Annual Report of last year, three bond propositions were submitted to the voters in November, 1933, for extensions to the high pressure system, sewer extensions, and additional boulevards. These bond issues were to provide funds to finance projects that had been accepted by the Public Works Administration.

The bonds in the sum of \$2,000,000 for high pressure extensions, and \$2,625,000 for sewer extensions and reconstruction were approved; but the boulevard bond issue in the sum of \$2,100,000 did not receive the required number of votes and was therefore disapproved.

The fact that the boulevard bond proposal failed to pass was unfortunate at that particular time. The construction of the two bay bridges, scheduled for completion in 1937, is progressing rapidly. The approaches to these bridges, when completed, will divert great flows of traffic into new channels, and many streets throughout the city must be straightened, widened, and reconditioned; in some instances new boulevards must be constructed. Had the Boulevard Bond issue proposal been approved, the financing of many of these necessary bridge approach arteries would have been assured.



**POTRERO AVENUE**

Looking southerly. Widening completed.



**POTRERO AVENUE**

Looking northerly during construction



The National Industrial Recovery Act of 1933 made possible the expenditure of \$600,000 on highways in this city. State legislation, effective August 23, 1933, provided for the expenditure of one-quarter cent a gallon of the gasoline tax on State highways within municipalities, and the estimated amount to be so expended in San Francisco was \$787,000 for the biennium ended June 30, 1935. (See Pages 61 to 65 inclusive, Annual Report 1933-34)

These two allotments of funds for highway construction within this city compensated somewhat for the amount of money that would have been available had the boulevard proposal bonds been approved.

The seven projects scheduled for construction by the California Highway Commission, under the terms of the National Industrial Recovery Act for expenditure on highways within this city, are nearing completion. The status of these projects, for which \$600,000 was allotted, follows:



TENIN STREET

Roadway widened to 60 feet

# NATIONAL RECOVERY: MUNICIPAL HIGHWAY PROJECTS

Constructed under the Supervision of  
The California Highway Commission

<u>Project</u>	<u>Location</u>	<u>Cost</u>	<u>Remarks</u>
8	10th Street - Market to Division: Fell Street - Van Ness to Polk; Bryant Street - 10th to 11th	\$ 71,721.92	Widen and pave
9	Alemany Blvd. Bay Shore to Mission	61,622.30	Pave
10	Bryant Street - 5th to 10th	75,034.79 *	Widen and pave
11	Bay Shore Boulevard - Waterloo to Islais Creek	32,773.65 *	Pave
12	Sloat Boulevard - 19th Ave. to Great Highway	113,717.84	Widen and pave
13	Potrero Ave. - Division to Army	177,337.00	Widen and pave
14	Harrison Street - 5th to 10th.	35,514.37 *	Widen and pave
		<u>\$ 617,771.87</u>	Total
		<u>600,000.00</u>	Federal Aid Fund
		\$ 17,771.87	Other State Funds

Projects 10, 11 and 14 (\*) were completed during the fiscal year ended June 30, 1935, but could not be officially accepted until a later date because some minor details had to be adjusted.

## ONE-QUARTER CENT GASOLINE TAX FUND

The six projects noted in the last Annual Report as approved for construction, to be financed from the one-quarter cent gasoline tax revenue, have not reached the construction stage. The status of these projects will be described elsewhere in this report.

BOULEVARD AND HIGHWAY CONSTRUCTION  
BY JOINT HIGHWAY DISTRICTS

JUNIPERO SERRA BOULEVARD EXTENSION is under the authority of Joint Highway District No. 10, composed of San Mateo and San Francisco Counties. The location and extent of the Boulevard has been fully described in previous reports.

Section No. 1 extends from the County Line,  $3\frac{1}{2}$  miles through San Mateo County, to a junction with El Camino Real, below Cypress Lawn. Contract No. 3, the last unit of this section, was completed in September, 1934. Joint Highway District No. 10 furnished most of the right-of-way for Contract No. 3, and the State, through Federal Aid, supplied the construction funds. Section No. 1 was originally estimated to cost \$900,000, but actually cost \$665,000, which was decreased by State subventions of \$178,000 and Federal Aid of \$220,000, so that San Francisco's 85 per cent was decreased to \$242,000.

Efforts are now being made to construct additional units of this highway.

THE OCEAN SHORE HIGHWAY, 75 miles long, from San Francisco to Santa Cruz, is now included in the Secondary State Highway System as Route 56, Secondary. However, the Highway District has continued in existence to aid in the furtherance of this project.

The first unit from the north, in geographical order, is Alemany Extension, about 2 miles long, from Junipero Serra Boulevard to Skyline Boulevard. This is to be a part of Route 56, Secondary, and was partially completed under a previous relief allocation. The paving is now under way as a State Highway contract. The pavement will be 30 feet wide with 8-foot shoulders.

The second unit,  $3\frac{1}{2}$  miles long, is known as the Thornton to Edgema unit, and it extends from the end of Alemany Extension at the Skyline Boulevard to and along the coast, passing Mussel Rock, and connecting with the existing coast road just north of Salada Beach. Appropriations have been made for this work from Federal Aid Funds, but there has been no action because of right of way difficulties, although it is hoped that this unit will soon be started.

The San Pedro Mountain unit,  $6\frac{1}{2}$  miles in length, has always been the first unit in importance of this road, as it eliminates a very winding stretch of road over San Pedro Mountain, sometimes known as Montara Mountain. The Board of Directors of the Highway District, on January 9, 1935, authorized the expenditure of \$9,000 from Joint Highway District's funds for a new survey by the State Highway Engineer's office to determine the best route over or around this mountain. It is proposed that the balance of the funds in the Joint Highway District, which

has been assessed to do the work on this unit, be turned over to the State Highway Department with the request that the State provide funds for construction.

Following the completion of the San Pedro Mountain unit, there will be provided 14 miles of practically new highway from the County Line to Farallone City; with existing roads this will make a fine road to Half Moon Bay. The proposed additional units are: Ginoni Hill from Waddell to Davenport,  $6\frac{1}{2}$  miles long, cost \$250,000; San Gregorio to Pescadero, about 8 miles long, cost over \$300,000; and the reconstruction at Waddell Beach along the Waddell Beach bluffs, about 2 miles, approximate cost \$400,000. Meanwhile, many smaller units may be constructed so that the Ocean Shore Boulevard may be gradually improved to conform to the standards of the State Highway System.

MISCELLANEOUS STREET CONSTRUCTION:

Van Ness Avenue South from Twenty-first Street to Twenty-fourth Street was widened. The existing curbs were set back three feet, concrete gutters were constructed, and an asphaltic conform pavement was laid, where necessary. The cost of this work was \$8,794.68.

Cayuga Avenue Underpass. When the Mission Viaduct was constructed in 1912, an opening was provided in the structure for passage of Cayuga Avenue under Mission Street. This viaduct is a heavy reinforced concrete structure on reinforced concrete piles. The footings, and the piles and columns near the footings, of the Cayuga Avenue opening, were being destroyed by electrolysis. These footings were uncovered and the damaged concrete and steel bars removed. All the exposed bars were cleaned and the structure repaired with gunite and quick setting cement. Copper bars were embedded in the concrete for future electrolysis readings.

IMPROVED UNDER PUBLIC ASSESSMENT:

Filbert and Kearny Street. This crossing was improved at a cost of \$2,294.83 of which \$1,413.78 was assessed against city property.

Ortega Street between Twentieth and Twenty-first Avenues was improved by grading, and the construction of sewers, curbs and pavement, at a cost of \$3,547.47.



Kramer Place and Pardee Alley were improved by grading, and the construction of sewers, curbs and pavement, at a cost of \$1,957.41.

Fitzgerald Avenue was graded and a sewer was constructed, at a cost of \$3,085.34.

Other miscellaneous street improvements were:

Marina Boulevard: Railroad right of way brought to grade with crushed rock. Cost \$2,525.70.

Pacific Avenue: Reconstructed between Presidio Avenue and Walnut Street. Cost \$2,786.86.

Twenty-Third Street: Reconstructed between Hoffman Avenue and Diamond Street. Cost \$3,116.65.

Tenth Avenue: Reconstruction between Lawton and Noriega Streets is under way.

Holladay Avenue Stairway - under way.

Shrader Street: Reconstruction between Seventeenth and Carmel Streets - under way.

BOULEVARD LIGHTING:

Alemany Boulevard Lighting, Section "A," from Bayshore Boulevard to Mission Street, was completed at a cost of \$11,794.

TRAFFIC: SIGNS AND MARKERS

TRAFFIC:

Traffic Engineering is directed by the Police Department, assisted by an engineer from this office.

The major work of this department consisted of traffic studies of approaches to the two Bay Bridges.

Existing traffic facilities were maintained and some minor additions were made thereto.

STREET SIGNS:

No appropriation for street signs was included in the budget and no new signs were erected. Maintenance work consisted of repairing damaged signs and erecting a few signs that were urgently needed.

A program of systematic maintenance was followed for many years which provided for painting of standards at necessary intervals. It has been necessary to discontinue this painting because of lack of funds. Many standards, especially those near the Ocean Beach, are badly in need of paint, and money for this work should be provided.

SPECIAL PROJECTS AND INVESTIGATIONSISLAIS CREEK RECLAMATION DISTRICT

As previously stated, all the construction work in the district has been completed, except the filling of the lands and streets which is now 95 per cent complete.

The filling agreements provided that, if any subsidence took place during a period of three years after a parcel was filled, the parcel should be refilled to official grade. Many parcels have been filled for more than three years and are now being refilled to official grade. The subsidence has been nominal considering the character of the ground and the depth of the fills.

GARBAGE COLLECTION AND DISPOSAL:

The Board of Supervisors on May 28, 1934, called for bids for disposal of garbage by incineration, to be received on August 20, 1934. No bids for disposal by incineration were received.

Bids were again called for on December 17, 1934, for disposal by any method other than dumping at sea. Eight bids were received on February 18, 1935. One of these bidders, the Sanitary Fill Company, a subsidiary of the Scavengers' Protective Union, proposed to dispose of garbage by the fill and cover method.

After analyzing these bids, this office recommended acceptance of the fill and cover proposal of the Sanitary Fill Company. The fill and cover project, which has been in operation for three years, is being done by this same Company, which is well equipped to do the work. The transportation of the garbage and the construction of the fill have proceeded without objection. At the close of this year no formal action had been taken on the recommendation.

STRUCTURES AND MISCELLANEOUS CONSTRUCTIONAUXILIARY WATER SUPPLY (HIGH PRESSURE) SYSTEM:

A program for the construction of extensions to the High Pressure System was accepted by the Public Works Administration, and a bond proposal, in the sum of \$2,000,000, was approved by the voters to finance the city's share of this work.

A list of projects, with their estimated cost, was included in the annual report of last year. The same projects were included in the construction program, many of which were completed during this year.

The Municipal Pipe Yard, at Sixth and Hubbell Streets, was constructed for the storage and testing of pipe and other materials for the first high pressure installation in 1908. Having been used only in a minor way for many years, it had deteriorated to such an extent that it was necessary to practically reconstruct it.

A contract for the rehabilitation of this yard was awarded August 8, 1934. The work included:

Reconditioning existing tracks.

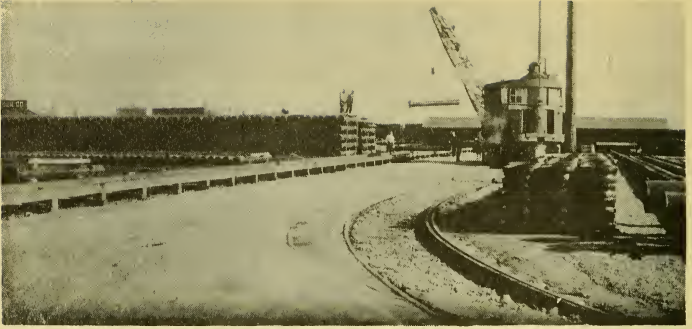
Constructing new tracks.

Constructing roads - Water-bound macadam base and asphalt wearing surface.

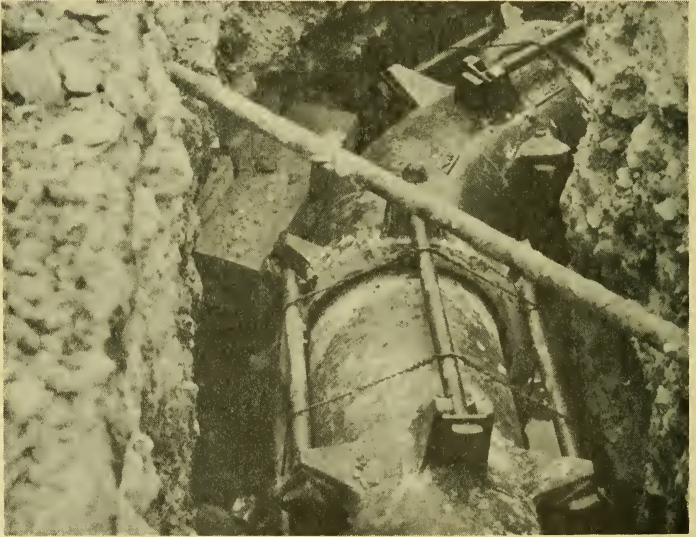
Cleaning and painting cast iron pipe, and cast iron and steel specials.

Cleaning interior of cast iron pipe, and cast iron and steel specials.

Overhauling testing plant and testing machinery.



**MUNICIPAL PIPE YARD**



**AUXILIARY WATER SUPPLY SYSTEM**

A bend bolted in place



Grading yard area.

Rebuilding or remodeling buildings and fences.

Providing water and plumbing services.

Electric lighting, complete.

Reconditioning two locomotive cranes.

Constructing and placing base skids.

Furnishing and storing lumber and nails.

General cleanup, etc.

The contract, amounting to \$44,618.70, was completed on December 4, 1934.

A separate contract for reconditioning gate valves amounting to \$10,402.25, was awarded on July 27, 1934, and was completed on November 28, 1934.

The approximate value of high pressure material stored in the yard, and reconditioned under the contracts noted above was:

Pipe, hydrants and fittings	\$290,000
-----------------------------	-----------

Gate valves	77,000
-------------	--------

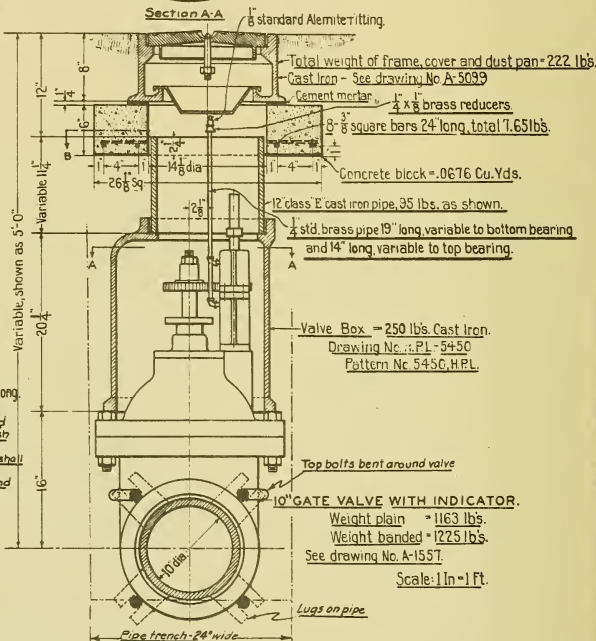
Sufficient pipe of the required type and size, for Section "A" of the Potrero District Extension, was included in the pipe stored at the yard. This made it possible to award a contract for this section at once. The work was completed before any new pipe was delivered.

Plans, specifications, details, and material lists were prepared by this bureau for the purchase of the necessary material, and contracts were entered into by the Purchaser of Supplies, as follows:

A technical drawing of a circular mechanical component, likely a valve or flange. It features concentric circles representing different diameters. A central circular area contains a smaller circle with a cross symbol. A rectangular section is attached to the right side of the central area, showing internal details. The drawing is a top-down view, indicated by the circular shape and the central bolt pattern.

1" std. Alemite fitting  
 $\frac{1}{4} \times \frac{1}{2}$  brass reducer  
 $\frac{1}{2}$  std. brass pipe  
 $\frac{1}{4}$  std. brass elbow  
 $\frac{1}{4}$  std. brass nipple

Note: The cost of all labor and materials necessary to furnish and install the lubricating attachments shown hereon shall be included in the unit price bid for hauling, setting and testing 10" Gate Valves.



10" VALVE BOX ASSEMBLY.

Revised April 29, 1935.  
Location of Lubricator  
pipes changed.

CITY AND COUNTY OF SAN FRANCISCO  
DEPARTMENT OF PUBLIC WORKS - BUREAU OF ENGINEERING

## STANDARD DETAILS FOR THE AUXILIARY WATER SUPPLY SYSTEM FOR FIRE PROTECTION

APPROVED:

ED: *John J. Casey.*  
CITY ENGINEER

DRAWN BY BM  
TRACED BY BM  
CHECKED BY WNB

DATE  
2-6-35

FILE  
HPL-5321<sup>1</sup>

<u>Description</u>	<u>Contractor</u>	<u>Amount</u>
Purchase of Cast Iron Pipe	United States Pipe and Foundry Co.	\$378,247.81
Purchase of Cast Iron Specials	Vernon Foundry, Inc.	19,860.49
Purchase of Cast Steel Specials	Enterprise Foundry	76,853.20
Purchase of Gate Valves	A.P. Smith Mfg. Co.	30,214.50
Purchase of High Pressure Hydrants	Rich Mfg. Co.	25,987.85
Purchase of High Pressure Nozzle Caps	M. Greenberg's Sons	361.62

The contracts for laying pipe included all lead, bolts, and specials found to be necessary as the pipe laying progressed. Before locating a high pressure line on the plans, all sources of information pertaining to structures in the streets were investigated. After a location was decided upon, test pits were opened in each block before the trench was started, but this precaution did not prevent complicated situations from developing when water and gas mains, sewers, ducts, and other underground structures were uncovered. The pipe laying has progressed rapidly. The status of the six contracts on which work was done during the year is:

Potrero District Extension	Section	"A"	100%	complete
"	"	"B"	50%	"
"	"	"C"	25%	"
"	"	"D"	21%	"
Marina	"	"A"	17%	"
"	"	"B"	18%	"



Contracts for other sections will be awarded according to the construction schedule.

All pipe, valves, hydrants, and cast iron and steel specials, were inspected by Robert W. Hunt Company, which entered into contract for this service.

All high pressure pipe was tested for the proper hydrostatic pressure, at the yard, before being stacked.

As soon as a section was completed it was turned over to the Fire Department for operation and maintenance.

#### BRIDGES:

Islais Creek Bridge: A new house for the watchman was constructed, and the underground conduit and wiring from the operator's house to the bridge were renewed. The steel structure was cleaned and repainted where necessary.

Sixth Street Bridge: The floor was improved by placing thereon four rows of steel traffic treads. The power cable, operating pinion, and oil lines were renewed.

Fourth Street Bridge: The steel structure was cleaned and repainted where necessary.

Third Street Bridge: The wearing surface of the roadway was treated with pea gravel and emulsified asphalt to improve traction.

SEWERSBOND SEWER CONSTRUCTION:

A sewer program, accepted by the Public Works Administration, for the construction of which the voters authorized a bond issue of \$2,625,000, was in progress during year.

Prior to July 1, 1934, bids had been received for seven projects, and four contracts had been awarded. During the fiscal year 1934-35, thirteen of these P.W.A. sewer projects were under construction. At the close of the year ten projects were complete and three projects were near completion.

PROJECTS COMPLETED

<u>Sewer</u>	<u>Cost</u>
Yosemite Avenue	\$ 46,929.06
Visitation Valley	25,481.42
Sloat Boulevard and Forty-fourth Ave.	16,435.12
Sixth Street	137,401.99
Sixteenth Street	49,225.37
Merced Lands	50,308.60
Lake Street (Invert)	14,508.80
Golden Gate Heights	9,403.04
Fifteenth Street, Section "C"	142,961.10
Commercial Street Pumping Station	9,876.26

PROJECTS UNDER CONSTRUCTION

<u>Sewer</u>	<u>Per cent Complete</u>
Merced District Sanitary	79
Brannan Street	87
Third Street	95



**SIXTH STREET SEWER**

Many piles 116 feet long were driven



These sewers were divided into two distinct groups. One group was constructed in undeveloped parts of the city where the contractor's activities were not interfered with in any way. The other group was constructed under difficult conditions.

The sewers in Sixth Street, Sixteenth Street, Fifteenth Street, Brannan Street, and Third Street composed the latter group. All these streets were traversed by street cars, and, in order to maintain service, the tracks were either supported or removed to temporary locations at the side of the trenches. In a few instances car service was discontinued. All these sewers were on piles, which in places exceeded 100 feet in length, and the movement of the pile drivers caused continuous work on trolley wires and utility overhead systems. Most of the sewers in this group are in an industrial district, and means of ingress and egress to buildings, warehouses, and shops had to be provided. Bridges for traffic were maintained at all street intersections, and, in the middle of many long blocks, foot-bridges were constructed to facilitate movements of the Fire Department.

The underground utility systems and the auxiliary water system for fire protection presented problems. These sewers replaced old sewers that were in use, so it was necessary to maintain sewage flows at all times. This was accomplished in most cases by diverting the flow around the affected area. Storm water was diverted in



a similar manner, although occasionally it was necessary to allow it to flow in an open trench.

The highway projects, constructed by the California Highway Commission, which have already been described, were located on streets adjacent to and in some instances crossing these sewer projects. The highway and sewer work was progressing simultaneously, which increased transportation difficulties. Notwithstanding these conditions, the work has been completed without any damage to the streets or adjoining property.

Lake Street Sewer: This six-foot circular brick sewer, constructed in 1893, was in perfect condition except where the invert had been eroded by sand and water. A contract was entered into for making the necessary repairs. This work consisted of bringing the invert to grade with Class "B" concrete and placing a lining of vitrified brick, thirteen bricks wide. The shoulders at the top of the brick were tapered off for nine inches with concrete. The sewage flow was diverted, by dams, into two 18" iron pipes placed above the new work. Dams were constructed at convenient intervals; this method proved very successful.

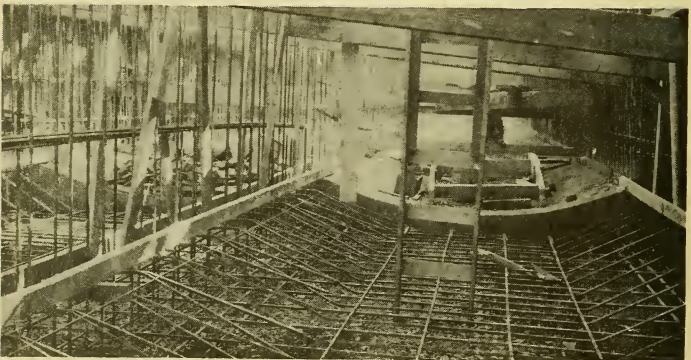
Fifteenth Street Sewer, Section "C," has two compartments - 10'0" x 9'0" and 9'6" x 9'0", and it replaced an old brick sewer which had been in service over fifty years. This old sewer, a basket handle section 11'6" x

8'6", was still in good condition but did not have sufficient capacity.

Commercial Street Pumping Station: This station was equipped originally with 2 - 6" and 1 - 8" pumps, driven with 2 - 10 H.P. and 1 - 15 H.P. motors. This equipment was not only obsolete but was not of sufficient capacity for present day needs. Three Fairbanks Morse sewage pumps, each with a capacity of 1500 G.P.M., driven with 3 - 25 H.P. Fairbanks Morse motors, including the necessary appurtenances, were installed.

This P. W. A. sewer program, with the exception of the sewage disposal plant, will be completed early in 1936.

The sewage disposal program will be described elsewhere in this report.



**FIFTEENTH STREET SEWER**

Two compartments. 10'0"x9'0" and 9'6"x9'0"

WORK PERFORMED UNDER CONTRACT

Main Sewers		\$ 521,993
Auxiliary Water Supply		<del>617,619</del>
Boulevards and Streets		
Paid by City	\$ 74,486	
Public Assessment	12,767	
Private Contract	<u>8,008</u>	95,261
Laguna Honda Home		
Steam Generating Plant		<u>100,933</u>
	TOTAL	\$ 803,681

STREET IMPROVEMENT ASSESSMENTS, ETC.

JULY 1, 1934 to JUNE 30, 1935

ASSESSMENTS AND BONDS FOR STREET WORK

Assessments issued for cost of street work performed	5
Cost of street improvements covered by assessments	\$ 11,102.19
Bonds prepared (in triplicate)	20
Amount of assessments guaranteed by bonds	\$ 3,780.61
Average amount guaranteed by each bond	\$ 189.03
Receipts for bond payments issued	1097
Amount of bond payments collected	\$ 41,689.86

STREET WORK PROCEEDINGS

Resolutions of Intention passed	11
Street improvements recommended under Resolution of Intention	10
Notices of Street Improvement posted	265
Notices of Resolution of Intention mailed	205
Ordinances ordering performance of street improvements passed	10
Proposals for street improvements published	12
Awards of Contract for street improvements published	7
Private contracts granted	0

NOTICES, PERMITS AND INVESTIGATIONS

Notices to construct and repair sidewalks	2008
Notices to construct bulkheads	42
Notices to remove obstructions	139
Notices to obtain curb lowering permits	122
Notices to construct guard rails	6
Notices to obtain oil tank permits	4
Notices to reconstruct side sewer traps	415
Notices to replace side sewer covers	84
Notices to obtain street space permits	197
Street space permits reported on	678
Oil tank permits reported on	83
House moving permits reported on	27
Miscellaneous calls and investigations	3024
Blasting bonds set and jobs supervised	6
Curb lowering permits	382

PERMITS AND FEES FOR CORPORATION TRENCHES

<u>Utility</u> <u>Excavation Permits</u>	<u>Total No.</u> <u>of Permits</u>	<u>Lin.Ft.</u> <u>of Mains</u>	<u>Total Fees</u> <u>For Permits</u>
Pacific Gas & Elec. Co.	4,128	11,905	\$6,274.50
S.F. Water Department	2,487	611	3,745.50
Pacific Tel. & Tel. Co.	165	8,331	268.50
Postal Telegraph Co.	7	--	4.50
Lowrie Paving Company	2	138,895	970.50
Barrett & Hulp	1	4,200	31.50
Pacific Pavements Co., Ltd.	1	23,488	177.00
W. J. Tobin	2	81,510	447.00
Sibley Grading & Teaming Co.	1	6,900	52.50
Pacific States Constn. Co.	1	30,640	231.00
M. J. Lynch	1	26,085	21.00
Eaton & Smith	1	11,730	88.50

SPECIAL PERMITS

	<u>Total No. of Permits</u>	<u>Total Fees For Permits</u>
Oil Tanks	65	\$ 97.50
Curb Lowering	382	1,026.00
Street Space	645	3,053.57
House Moving	27	56.00
Sub-sidewalk	-	-
Oil Tank Permits Reported on	83	-

DIVISION OF GRADES

The two Bay Bridges, when completed, will not only bring an increased volume of traffic into the city, but will direct this traffic into new channels. Many streets adjacent to the bridges, and major streets throughout the city, must be widened and improved to provide adequate traffic arteries.

The roadways of many of these streets are widened by setting back curbs and reducing sidewalk widths. The Division of Grades makes the investigations and studies of these widening projects and prepares the necessary ordinances.

# DIVISION OF SURVEYS

## SURVEYS PERFORMED:

For Public Contracts	38
For Private Contracts	3
Resurveys for Contracts	8
For Municipal Departments	<u>287</u>

Total for public improvements 336

## LOT SURVEYS:

For private owners	10	
For Municipal Departments	<u>8</u>	<u>18</u>
Total Surveys		354

Surveys included approximately 665 blocks and cross-ings, a total of 227,000 feet, or about 43.5 miles, in addition to about 105 miles of monument and highway lines, and the placing and replacing of 170 monuments.

The surveys include:

Lake Merced Roads.

Sloat Boulevard-Skyline Boulevard Cut-off Road.

Divisional Highway: 29th and Castro Streets to Diamond and Bosworth Streets.

Golden Gate Park Road: 19th Avenue and Lincoln Way to Fulton Street and Park-Presidio Drive.

Park-Presidio Drive: Fulton St. to the Presidio.

Bay Shore, Alemany, and Junipero Serra Boulevards.

Golden Gate Park Sewage Disposal Plant.

Contour Survey from Mile Rock to Land's End.

Geodetic Surveys.

Hydrographic Surveys for Sewage Disposal System and Surveys for the following Bond Sewers:  
Sunnydale District, Division Street, Merced Lands, 3 d Street, 6th Street, 16th Street, Folsom Street, and 18th Street.

Surveys were also made for additions to the High Pressure System.

Monument Lines were completed of the Fifty Vara District from Larkin Street to The Embarcadero and from Market Street to The Embarcadero.

Preliminary Monument Lines have been run in the portions of the Potrero District from Potrero Avenue to 3 d Street and from 16th Street to Army Street.

The resetting of Monuments in San Miguel City was completed.

Preliminary lines have been established in the Bernal Heights District north of Cortland Avenue.

An investigation of the Monument Lines of the entire West Portal District is now in progress.

FEEs RECEIVED FOR SURVEYS AND INSPECTION

<u>Year</u>	<u>Month</u>	<u>Surveys</u>	<u>Inspection</u>
1934	July	\$166.65	\$ 680.68
	August	63.00	569.29
	September	330.00	776.87
	October	30.00	696.80
	November	-	696.80
	December	47.35	735.30
1935	January	30.00	696.80
	February	30.00	810.50
	March	124.35	696.80
	April	128.90	821.70
	May	-	785.30
	June	35.30	790.30
		<u>\$ 985.55</u>	<u>\$ 8,757.14</u>



PRECISE LEVELS AND BENCH MARKS

	<u>Bench Marks</u>	<u>Distance in Miles</u>
100 Vara	510	12.00
50 Vara	1004	18.00
Potrero	88	1.40
Mission	45	.60
Sunset	1318	23.50
Golden Gate Heights	150	6.00
Richmond	133	2.40
South San Francisco	839	15.20
Reis Tract	580	17.00
University Mound	503	12.30
City Land Association	17	0.40
Other Districts	<u>61</u>	<u>0.30</u>
TOTAL	5248	109.10

OFFICE WORK

In connection with and in addition to the foregoing, the office work included the following:

Compiling and computing data on 354 surveys for the use of the surveyors in the field on each survey made; adjusting monument lines and drawing monument maps and official maps of street widenings, extensions, etc.; drawing many maps of current observations in Golden Gate Strait and San Francisco Bay in connection with Sewage Disposal Studies; continual work on the 100-foot scale map of San Francisco, consisting of 354 sheets, showing all official data on



Applying to City Pay Contracts and Major Contracts Involving City Funds

Description	Contractor	Awarded	Completed Date	%	Contract Amount	Expended to 6/30/35	Fund
<u>BOULEVARDS, PAVING, GRADING, ETC.</u>							
Crossing of Filbert and Kearny Streets	M. J. Lynch	8/1/34	10/23/34	100	\$ 2,294.83	\$ 1,413.78	County Roads and Public Assessment
Marina Boulevard Railroad Right of Way	Chas. L. Harney	5/22/35	6/14/35	100	2,525.70	2,525.70	County Roads
Pacific Ave. (Reconstruction) Presidio Ave. to Walnut St.	The Fay Improve- ment Company	2/1/35	3/25/35	100	2,786.86	2,786.86	County Roads
Cayuga Avenue Underpass Mission Viaduct	E. J. Treacy	1/30/35	4/18/35	100	3,745.66	3,745.66	1927 Boulevard Bonds
Golden Gate Park Roads Contract #2	Pacific Pave- ments Co. Ltd.	9/1/34	10/4/34	100	29,280.14	29,280.14	Parks & Squares Bonds
Golden Gate Park Roads Contract #3	Pacific Pave- ments Co. Ltd.	4/20/34	8/22/34	100	23,751.19	23,751.19	Parks & Squares Bonds
<u>BOULEVARD LIGHTING</u>							
Alemany Boulevard Section "A" Bay Shore Boulevard to Mission Street	H. C. Reid	1/30/35	6/4/35	100	11,794.00	11,794.00	1927 Boulevard Bonds
<u>MISCELLANEOUS</u>							
Laguna Honda Home Steam Generating Plant	Frederick W. Snook	1/31/34	12/28/34	100	100,933.72	100,933.72	1929 Hospital Bonds

CURRENT CONTRACT DATA

1934-1935

Applying to City Pay Contracts and Major Contracts Involving City Funds

Description	Contractor	Awarded	Completed Date	%	Contract Amount	Expended to 6/30/35	Fund
<u>SEWERS</u>							
Yosemite Avenue Sewer Keith St. to Ingalls St.	MacDonald & Kahn Co. Ltd.	7/20/34	12/7/34	100	\$ 46,929.06	\$ 46,929.06	1933 Sewer Bonds P. W. A.
Visitation Valley Sewer Schwerin St. to Sunnydale Avenue	MacDonald & Kahn Co. Ltd.	6/20/34	12/31/34	100	25,481.42	25,481.42	1933 Sewer Bonds P. W. A.
Sloat Boulevard and Forty- fourth Avenue Sewer	E. J. Treacy	7/6/34	1/3/35	100	16,435.12	16,435.12	1933 Sewer Bonds P. W. A.
Sixth Street Sewer - Howard Street to Brannan Street	Eaton & Smith	8/8/34	6/26/35	100	137,401.99	137,401.99	1933 Sewer Bonds P. W. A.
Sixteenth Street Sewer Shotwell Street to Harrison Street	G. C. W. and H. H. Haun	6/20/34	4/25/35	100	49,225.37	49,225.37	1933 Sewer Bonds P. W. A.
Merced District Sanitary Relief Sewer	W. C. Akard	3/27/35		79	(7,466.20)	5,308.38	1933 Sewer Bonds P. W. A.
Merced Lands Sewer	MacDonald & Kahn Co. Ltd.	12/5/34	5/29/35	100	50,308.60	50,308.60	1933 Sewer Bonds P. W. A.
Lake Street Sewer (Invert) Twenty-fourth Ave and Lake St. to Twenty-Seventh and Sea Cliff Avenue	Robert B. McNair	7/18/34	10/26/34	100	14,508.80	14,508.80	1933 Sewer Bonds P. W. A.
Golden Gate Heights District Sewers	Bayshore Con- struction Co. Ltd.	2/15/35	5/29/35	100	9,403.04	9,403.04	1933 Sewer Bonds P. W. A.

CURRENT CONTRACT DATA    1934-1935

Applying to City Pay Contracts and Major Contracts Involving City Funds

Description	Contractor	Awarded	Completed Date	%	Contract Amount	Expended to 6/30/35	Fund
<u>SEWERS (Continued)</u>							
Fifteenth Street Sewer - Sec. "C" in Treat Avenue and Division Street	Eaton & Smith	6/13/34	3/5/35	100	\$ 142,961.10	\$ 142,961.10	1933 Sewer Bonds P. W. A.
Commercial Street Sewage Pumping Station	Anderson and Rowe	10/31/34	3/15/35	100	9,876.26	9,876.26	1933 Sewer Bonds P. W. A.
Brannan Street Sewer - Ninth Street to Center Place	MacDonald & Kahn Co. Ltd.	7/27/34		87	(245,542.44)	190,264.20	1933 Sewer Bonds P. W. A.
Third Street Sewer - Twenty third St. to Islais Creek	Union Paving Co.	6/13/34		95	(68,330.25)	77,151.81	1933 Sewer Bonds P. W. A.
Twenty-second Street (Reconstruct) San Bruno Ave to Potrero Avenue	Bayshore Construction Co. Inc.	2/13/35	4/9/35	100	1,389.60	1,389.60	1929 Hospital Bonds
<u>AUXILIARY WATER SUPPLY SYSTEM FOR FIRE PROTECTION</u>							
Municipal Pipe Yard - Rehabilitation at Sixth and Hubbell Streets	M. J. Lynch	8/22/34	12/4/34	100	44,618.70	44,618.70	1933 High Pressure Bonds P. W. A.
Reconditioning Gate Valves	General Engineers and Dry Dock Co.	7/27/34	11/28/34	100	10,402.25	10,402.25	1933 High Pressure Bonds P. W. A.
Potrero District Extension Section "A"	Herman Lawson Company	8/1/34	1/24/35	100	26,259.69	26,259.69	1933 High Pressure Bonds P. W. A.
Potrero District Extension Section "B"	Herman Lawson Company	3/27/35		50	(77,049.19)	37,937.37	1933 High Pressure Bonds P. W. A.

CURRENT CONTRACT DATA 1934-1935

Applying to City Pay Contracts and Major Contracts Involving City Funds

Description	Contractor	Awarded	Completed Date	%	Contract Amount	Expended to 6/30/35	Fund
<u>AUXILIARY WATER SUPPLY SYSTEM FOR FIRE PROTECTION (Continued)</u>							
Potrero District Extension Section "C"	Robert B. McNair and H. Gould	4/5/35		25.7	\$ (69,815.62)	\$ 11,630.72	1933 High Pressure Bonds P.W.A.
Inspection of Cast Iron Special Castings	Robert W. Hunt Company	12/12/34	4/19/35	100	594.77	594.77	1933 High Pressure Bonds P.W.A.
Inspection of Cast Iron Pipe	Robt.W.Hunt Co.	11/14/34	7/3/35	100	2,507.53	2,507.53	1933 High Pressure Bonds P.W.A.
Inspection of Valves and Hydrants	Robt.W.Hunt Co.	9/19/34	5/6/35	100	1,111.37	1,111.37	1933 High Pressure Bonds P.W.A.
Potrero District Extension Section "D"	E. J. Treacy	4/12/35		21	(52,816.32)	1,819.23	1933 High Pressure Bonds P.W.A.
Marina District Extension Section "A"	Peter J. McHugh	4/19/35		17	(83,961.27)	12,765.42	1933 High Pressure Bonds P.W.A.
Marina District Extension Section "B"	P. L. Burr	4/26/35		18	(27,054.68)	4,410.50	1933 High Pressure Bonds P.W.A.

EMERGENCY CONTRACTS

Twenty-fourth and West Clay St. Sewer(Reconstruction) Also replanting sewer easement	Macdonald & Kahn Co. Ltd.	11/16/34	1/23/35	100	3,380.99	3,380.99	Extension and Reconstruction of Main Sewers
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Contract amounts in ( ) are based on estimated quantities.

\*Amount paid by City, balance by property owners.

# INFORMAL CONTRACTS

Completed during Fiscal Year 1934 - 1935

Description	Type of Work	Amount	Fund
Bay Shore Boulevard Waterloo to Marengo Street	Sidewalk	\$ 312.00	1927 Boulevard Bonds
Van Ness Avenue extended Belt Line Ry. to Pump Plant No.2.	Sidewalk	382.00	County Roads
Cortes Avenue - Magellan Avenue to Taraval Street	Sewer	792.00	General Fund
Engineering Studies - Consulting Engineers (4 Contracts)	Sewage Disposal	12,500.00	1933 Sewer Bonds P.W.A.
Geology Report - Tunnel Baker's Beach and Mile Rock	Sewage Disposal	225.00	1933 Sewer Bonds P.W.A.
Inspection of Untreated Filling	Sewer	487.60	1933 Sewer Bonds P. W. A.

DIVISION OF DESIGN

This division investigates and prepares reports on all proposed major projects, including preliminary designs and estimates of cost. When a decision has been reached to proceed with a project, for which money is available, this division prepares all plans and specifications for construction contracts.

Studies and investigations on some projects continue over several years, because the necessary funds for construction are not available, or, because other projects of greater importance take precedence.

The work done by this division is divided into two groups. One group includes those projects which were completed. The other group includes projects on which work was done but completion of which will be deferred until a later date. It will be noted that the report of this division refers to investigations, studies, plans and specifications only, and not to construction.

During the year this division completed investigations, plans and specifications for projects totaling an estimated cost of \$2,607,700. The total estimated cost of projects on which work was done, but not completed, was \$64,684,400.



(These items refer to Plans and Specifications only, and not to actual construction)

<u>Major Divisions</u>	<u>Plans and Specifications Complete</u>	<u>Plans and Specifications Under Way</u>
Boulevards	\$ 160,000	\$ 200
Bridges	-	85,000
Estimates, Investigations and Reports	-	-
Joint Highways	-	-
Maps	-	-
Miscellaneous Plans	125,000	56,800,000
Sewers	1,039,800	1,847,000
Auxiliary Water Supply (High Pressure) System	1,239,000	162,000
One-Quarter Cent Gasoline Tax - State Highways	37,000	2,289,000
Major Thoroughfares and Special Improvements	6,900	3,501,200
Street Signs - Traffic Department	-	-
	<hr/> \$ 2,607,700	<hr/> \$ 64,684,400

# BOULEVARD PLANS

<u>Name</u>	<u>Location</u>	<u>Length Feet</u>	<u>Width Feet</u>	<u>Investigations, Reports, Plans and Specifica- tions Complete</u>	<u>Investigations, Reports, Plans and Specifica- tions Under Way</u>	<u>Lands</u>	<u>Remarks</u>
Army Street Extension	Potrero Ave to Bryant Street	950	100	\$ 33,000	\$ -	\$100,000	Widening
Alemaný Boulevard - Sec. "A"	Bay Shore Boulevard to Mission Street	7,100	100	63,000	-	-	Calif. State Highway
Alemaný Boulevard - Sec. "C"	Ocean Avenue to Seneca Ave.				100		Subsidence Levels
Alemaný Boulevard - Sec. "C"	Naglee Ave. to San Jose Ave.				100		Subsidence Levels
Alemaný Boulevard - Sec. "D"	Sickles Ave. to Orizaba Ave Including Lights	1,630	100	64,000			Final Pavement

## MAJOR THOROUGHFARE PLANS

Divisional Highway	3 miles		\$ 3,000,000	\$2,000,000	
Portola Drive Widening- Evelyn Way to Sloat Blvd.	-	100	150,000	550,000	Widen
Portola Drive - 24th Street Fowler Avenue	3,950	100	21,000		Permanent Pavement and Sidewalks
Bay Street - Fillmore Street to Embarcadero	-	100	314,000	1,103,000	Widen

# S E W E R S

<u>Name</u>	<u>Location.</u>	<u>Length Feet</u>	<u>Size</u>	<u>Plans and Specifications Complete</u>	<u>Plans and Specifications Under Way</u>	<u>Remarks</u>
Fifteenth Street		1129	2 compartments 10' x 9'	\$ 159,000	-	Reconstruct
Visitacion Valley		1275 695	3'0" x 4'6" 3'6" x 5'3"	35,000	-	
Sloat Boulevard and 44th Avenue		490 1000 804	21" V.C.P. 2' x 3' 2'6" x 3'9"	24,000	-	
Third Street - 23rd St. Islais Creek		1860 1030	3' x 4'6" 3'6" x 5'3"	75,000	-	
Lake Street Outfall		1900		11,000	-	Repair existing Invert
Sixteenth Street - Howard Street to Harrison St.		1050	5'0" Cir.	43,000	-	Reconstruct
Brannan Street Third St. to Ninth Street		93 870 2545 665	3'0" x 4'6" 4'6" Cir. 5'0" Cir. 6'6" Cir.	257,000	-	Reconstruct
Yosemite Avenue - Kieth Street to Ingalls Street		590 1050	6' x 9' Basket 7'0" Cir.	61,000	-	
Sixth Street Howard St. to Brannan St.		579 1267 605	3'6" x 5'3" 5'0" Cir. 5'6" Cir.	140,000	-	Reconstruct
Sixth Street Townsend St. to Channel		940	6'0" Cir.	87,000	-	Reconstruct
Golden Gate Heights		4200	V.C.P.	8,500	-	-

SEWERS (Continued)

<u>Name</u>	<u>Location</u>	<u>Length Feet</u>	<u>Size</u>	<u>Plans and Specifications Complete</u>	<u>Plans and Specifications Under Way</u>	<u>Remarks</u>
Merced Lands Sewer		2900	5'0" Cir.	\$ 68,000	-	-
Sanitary Relief - Merced Dist.		2400	8" V.C.P.	9,000	-	-
Commercial Street Pumping Station		-		10,300	-	-
Discharge to North Point Main Marina Pumping Plant		9500	30" S.P.	-	\$ 115,000	-
Richmond - Sunset Treatment Plant				-	120,000	-
				-	1,200,000	-
Eighteenth Street - Treat Ave to Shotwell Street		1400	7'6" Cir. 6'3" Cir. 18" V.C.P.	52,000	-	-
Alemany Sewer Extension		3100	2 Compartment 8'6" x 11'0"		412,000	Reinforced Concrete
Sewage Pumping Stations		-	-	-	-	Maintenance

AUXILIARY WATER SUPPLY (HIGH PRESSURE) SYSTEM

<u>Name</u>	<u>Plans and Specifications Complete</u>	<u>Plans and Specifications Under Way</u>	<u>Remarks</u>
Pipe Yard Rehabilitation (6th & Hubbel Streets)	\$ 54,000	-	
Valve Repairs	16,000	-	
Potrero Ave. Sec. "A" Installation	35,000	-	
Hydrants - Purchase	27,000	-	
Valve - Purchase	60,000	-	
Pipe - Purchase	349,000	-	
Cast Steel Specials - Purchase	70,000	-	
Cast Iron Specials - Purchase	23,000	-	
Potrero Dist. Sec. "B"	95,000	-	
Potrero Dist. Sec. "C"	79,000	-	
Potrero Dist. Sec. "D"	53,000	-	
Marina District - Section "A"	99,000	-	
Marina District - Section "B"	33,000	-	
Marina District - Section "C"	128,000	-	

# AUXILIARY WATER SUPPLY (HIGH PRESSURE) SYSTEM (Continued)

44

<u>Name</u>	<u>Plans and Specifications</u>		<u>Plans and Specifications Under Way</u>	<u>Remarks</u>
	<u>Complete</u>			
Park - Presidio Dist. Sec. "A"	\$ 74,000			
Park - Presidio Dist. Sec. "B"	-	\$ 56,000		
Sunset District	44,000	-		
Hayes Valley District	-	63,000		
Embarcadero - Section "A"	-	31,000		
Embarcadero - Section "B"	-	12,000		

# SPECIAL IMPROVEMENT PLANS

<u>Name</u>	<u>Location</u>	<u>Length Feet</u>	<u>Width Feet</u>	<u>Investigations, Reports, Plans and Specifica- tions Complete</u>	<u>Investigations, Reports, Plans and Specifica- tions Under Way</u>	<u>Lands</u>
El Camino Del Mar	East of 32nd Ave	108			\$ 2,300	\$700      Widen
Holliday Ave. Stairway	Peralta Ave. to Bay Shore Boulevard			\$ 3,500		
Laidley Street Slide	Mateo to Roanoke Streets				900	Oiling Surface
Marina Boulevard	Buchanan to Lyon Streets			3,400		Improve R.R. Right of Way
Union St. and Calhoun Sts.					13,000	

## MISCELLANEOUS PLANS

Rapid Transit Structures		\$ 56,800,000	
S.F. Hospital Heating Plant		125,000	Changes & Additions
Bernal Cut			Maintenance of Slopes
Bridges		85,000	Repairs & Alterations

ONE-QUARTER CENT GASOLINE TAX PROGRAM

PROJECTS APPROVED TO JUNE 30, 1935

46

<u>Object</u>	<u>Route</u>	<u>Miles</u>	<u>Location</u>	<u>Plans and Specifications Complete</u>	<u>Plans and Specifications Under Way</u>	<u>Lands</u>	<u>Remarks</u>
1	55	0.2	Sloat Boulevard - 39th Ave to 43rd Ave.	\$ 37,000	-	\$ 18,000	Change in Alignment
2	55	0.8	Sloat - Skyline Cut-off	-	\$ 202,000	-	New Road
3	2	0.2	San Jose Ave - Alemany Boulevard to County Line	-	17,000	55,000	Widen and Pave
4	2	0.2	San Jose Ave. - County Line to Bepler Street	-	39,000	100,000	Widen and Pave
5	56	3.0	19th Ave. and Golden Gate Park Crossing - Sloat Boulevard to Fulton St.	-	1,800,000	1,100,000	
6	56	1.0	Park - Presidio Boulevard Fulton St. to Presidio	-	231,000	-	Pave



ESTIMATES, INVESTIGATIONS, AND REPORTS:

<u>Name</u>	<u>Status</u>
Rapid Transit Structures	Under Way
San Francisco Hospital Heating Plant	Complete

MAPPING:

Sewer Map	1" - 1000' Under Way
Auxiliary Water Supply (High Pressure) System	1" - 1000' Under Way
Underground Structures	1" - 10' Under Way
Underground Structures	1" - 50' Under Way

REPAIRS TO BRIDGES

<u>Location</u>	<u>Work</u>	<u>Plans Complete</u>	<u>Plans Under Way</u>
Fourth Street	Steel Grating	-	\$ 10,000
Islais Creek Bridge	Steel Grating Flooring	-	3,700
Sixth Street Bridge	Traffic Plates	-	No estimate
Beale Street Bridge	Alterations and Approaches	-	\$ 72,000

SEWAGE DISPOSAL

As previously noted, this office completed a "Preliminary Report on Studies in Connection with Proposed Sewage Disposal Improvements along the North Shore of San Francisco" in April, 1934. In this report it was recommended that a plant be constructed in the westerly portion of the Presidio (U.S. Military Reservation) at Baker's Beach, and another plant on city property in the Marina District.

Upon completion of this report, this office requested that a Board of Consulting Engineers be appointed to review and pass upon its recommendations. According to this request, the Director of Public Works, W. H. Worden on July 25, 1934 appointed the following eminent sanitary engineers:

Harrison P. Eddy	Boston, Massachusetts.
Leon B. Reynolds	Stanford University.
Charles Gilman Hyde	University of California.
Clyde C. Kennedy	San Francisco, California.

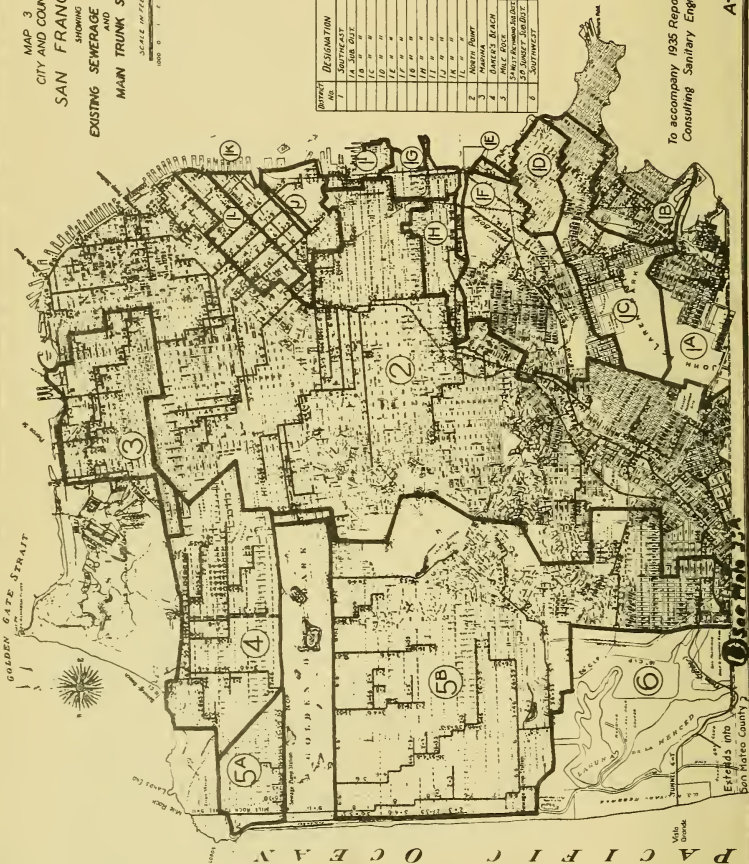
Shortly thereafter, negotiations between the City and the military authorities for permission to construct a sewage disposal plant in the Presidio failed to reach a successful conclusion, as the permit was denied. Unable to follow the original plan, the City was forced to revise the whole program for disposal. After further studies, a comprehensive plan has been presented, which provides for the treatment and disposal of all sewage in the city. It is proposed to construct certain units as funds are provided.

In a report by the Board of Consulting Sanitary Engineers, May, 1935, the following specific recommendations were made:

1. That the sewage of the existing Southeast sewerage district be intercepted and carried to treatment plants at or near China Point, Hunter's Point and North Point, in accordance with the general plan which the City has been following.
2. That the sewage of the existing North Point sewerage district and of a portion of the existing Southeast sewerage district be pumped at the proposed North Point sewage treatment plant; and that the sewage of the existing North Point, of a part of the existing Southeast, and of the Marina sewerage districts be treated to remove (a) grit, (b) oil, grease, and other floating matter, and (c) the coarser portion of the suspended material, by means of racks, grit chambers, aerated skimming tanks, and fine screens; and that the treated sewage be discharged at a distance of 2000 feet from the bulkhead line, in water at least 50 feet deep, through a submerged outlet pipe equipped with a system of diffusion nozzles.

MAP 3  
CITY AND COUNTY OF  
SAN FRANCISCO  
SHOWING  
EXISTING SEWERAGE DISTRICTS  
AND  
MAIN TRUNK SEWERS

SCALE IN FEET  
1" = 1,000'



DISTRICT	DESIGNATION	AREA IN ACRES
1	SOUTHEAST	1,121
2	1A. SOUTHWEST	650
3	1B. " "	253
4	1C. " "	253
5	1D. " "	253
6	1E. " "	35
7	1F. " "	1,121
8	1G. " "	350
9	1H. " "	40
10	1I. " "	25
11	1J. " "	350
12	1K. " "	350
13	1L. " "	350
14	1M. " "	350
15	1N. " "	350
16	1O. " "	350
17	1P. " "	350
18	1Q. " "	350
19	1R. " "	350
20	1S. " "	350
21	1T. " "	350
22	1U. " "	350
23	1V. " "	350
24	1W. " "	350
25	1X. " "	350
26	1Y. " "	350
27	1Z. " "	350
28	1AA. " "	350
29	1AB. " "	350
30	1AC. " "	350
31	1AD. " "	350
32	1AE. " "	350
33	1AF. " "	350
34	1AG. " "	350
35	1AH. " "	350
36	1AI. " "	350
37	1AJ. " "	350
38	1AK. " "	350
39	1AL. " "	350
40	1AM. " "	350
41	1AN. " "	350
42	1AO. " "	350
43	1AP. " "	350
44	1AQ. " "	350
45	1AR. " "	350
46	1AS. " "	350
47	1AT. " "	350
48	1AU. " "	350
49	1AV. " "	350
50	1AW. " "	350
51	1AX. " "	350
52	1AY. " "	350
53	1AZ. " "	350
54	1BA. " "	350
55	1BB. " "	350
56	1BC. " "	350
57	1BD. " "	350
58	1BE. " "	350
59	1BF. " "	350
60	1BG. " "	350
61	1BH. " "	350
62	1BI. " "	350
63	1BJ. " "	350
64	1BK. " "	350
65	1BL. " "	350
66	1BM. " "	350
67	1BN. " "	350
68	1BO. " "	350
69	1BP. " "	350
70	1BQ. " "	350
71	1BR. " "	350
72	1BS. " "	350
73	1BT. " "	350
74	1BU. " "	350
75	1BV. " "	350
76	1BW. " "	350
77	1BX. " "	350
78	1BY. " "	350
79	1BZ. " "	350
80	1CA. " "	350
81	1CB. " "	350
82	1CC. " "	350
83	1CD. " "	350
84	1CE. " "	350
85	1CF. " "	350
86	1CG. " "	350
87	1CH. " "	350
88	1CI. " "	350
89	1CJ. " "	350
90	1CK. " "	350
91	1CL. " "	350
92	1CM. " "	350
93	1CN. " "	350
94	1CO. " "	350
95	1CP. " "	350
96	1CQ. " "	350
97	1CR. " "	350
98	1CS. " "	350
99	1CT. " "	350
100	1CU. " "	350

To accompany 1935 Report of Board of  
Consulting Sanitary Engineers.

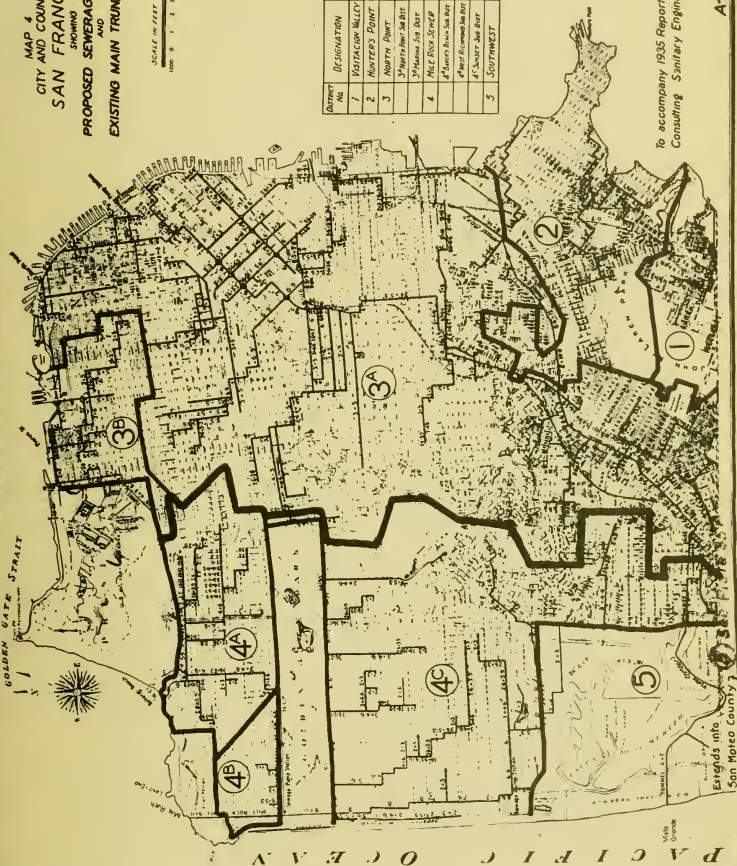
A-10,995

PLATE 35

MAP 4  
CITY AND COUNTY OF  
SAN FRANCISCO  
SHOWING  
PROPOSED SEWERAGE DISTRICTS  
AND  
EXISTING MAIN TRUNK SEWERS

SCALE IN FEET  
1000 0 1 2 3000

DISTRICT No.	DESIGNATION	AREA IN ACRES Un-Surveyed TOTAL
1	VISITACION VALLEY	650
2	HUNTERS POINT	2,275
3	NORTH POINT	12,395
	3 <sup>a</sup> Hunters Point Div.	11,840
	3 <sup>b</sup> Hunters Point Div.	555
4	MILE RICE CREEK	6,825
	4 <sup>a</sup> Hunters Point Div.	6,425
	4 <sup>b</sup> Hunters Point Div.	400
5	SOUTHWEST	2,600



To accompany 1935 Report of Board of  
Consulting Sanitary Engineers

A-10,996  
PLATE 36.

3. That the sewage of the Marina sewerage district be pumped through a force main to the North Point treatment plant, the force main being laid for a part of its length within the tunnel of the Belt Line Railroad under Fort Mason.
4. That the North Point sewerage works be constructed as soon as the necessary funds become available, and that, pending their construction, the sewage of the Marina sewerage district be discharged into the Beach Street sewer in The Embarcadero, whence it will flow into the slip between Piers 37 and 39.
5. That land for the North Point sewage treatment plant be acquired as soon as financially practicable, even though plant construction cannot be undertaken at that time.
6. That the sewage of the major portion of the Baker's Beach sewerage sub-district be diverted and conveyed by gravity through a sewer tunnel from the intersection of Twenty-fourth Avenue and Lake Street to the intersection of Thirty-fourth Avenue and Fulton Street; thence through a sewer in Fulton Street to Forty-sixth Avenue, thence to a proposed treatment plant in Golden Gate Park; and that the sewage of the remainder of the Baker's Beach sub-district be pumped at an underground pumping station situated at the northern end of Twenty-fifth Avenue



North, to the proposed sewer at Twenty-fifth Avenue and Lake Street.

7. That the sewage of the major portion of the West Richmond sewerage sub-district be diverted from the existing trunk sewer in Fulton Street at Forty-sixth Avenue and combined with the sewage from the Baker's Beach sub-district at that point; and that the remainder of the sewage of the West Richmond sub-district be concentrated at the existing pumping station at Forty-eighth Avenue and Fulton Street, and pumped through a force main to that same point whence all the sewage would flow by gravity through a proposed sewer leading to the treatment plant.
8. That the sewage of a portion of the Sunset sub-district be diverted and conveyed by gravity from the existing sewer in Lincoln Way at Forty-fifth Avenue to the treatment plant; and that the sewage of the remainder of the Sunset sub-district be diverted and pumped from the existing Mile Rock trunk sewer in Golden Gate Park to the treatment plant.
9. That the sewage of the Mile Rock sewerage district, comprised of the Baker's Beach, West Richmond and Sunset sub-districts, be treated to remove (a) grit, (b) oil, grease, and other floating matter, and (c) that portion of the suspended solids which will settle in a moderate period of time, by means of racks, grit

chambers, aerated skimming tanks, and sedimentation tanks; that as much as needed of the effluent be furnished for use in the Park, and that the remainder after chlorination be discharged temporarily into the existing Mile Rock trunk sewer and discharged through the present outlet at the north shore a short distance eastward of Lobos Point; and that the sludge from the sedimentation tanks be subjected to biological digestion in gas-tight tanks, that the digested sludge be dewatered by means of vacuum filters, and that the dewatered sludge be furnished for use in the Park, upon municipal golf courses, and other areas.

10. That, in anticipation of the eventual need of providing for the discharge in deep water well offshore of the effluent from the Golden Gate Park treatment plant above described or for complete treatment in the Park, borings and other data be secured which will make possible a reliable estimate of the efficacy and cost of discharge in deep water in comparison with complete treatment; and that, when necessary, the more advantageous of these plans be adopted and executed.
11. That negotiations be undertaken immediately with the authorities of Daly City and the adjoining areas in San Mateo County, which are tributary to the Vista Grande sewer outlet in the extreme southwest corner of the City and County of San Francisco, to the end



that provision be made for eliminating the nuisance now existing, due to the sewage from these areas, either by complete treatment and appropriate disposal of the effluent or by pumping through a force main into the sewers leading to the treatment plant in Golden Gate Park.

12. That the City request the War Department to make provision for delivering all of the sewage of the Presidio and Fort Mason into the sewerage system of the City in order that it may be properly treated together with the City's sewage.

With the completion of the works recommended and their faithful and efficient operation, the sewage will be disposed of in as effective and economical a manner as possible having due regard for the suitable protection of the beaches and shore waters from sewage pollution.

It is to be noted that this Report recommends the removal of the sewage of the Marina sewerage district by pumping into the North Point district where it is proposed to be treated in the future in combination with the sewage of that district.

In the meantime it should be understood that the removal of the sewage as recommended will definitely eliminate the major source of contamination of shore waters in the vicinity of the Yacht Harbor. Under certain conditions of tide, as discussed in the report, some contamination of these waters does

and will continue to occur from the sewage discharged at North Point. However, the conditions would not be changed in this respect even though a plant for the complete treatment of the sewage of the Marina district were constructed within that district.

At present the shore waters of the Marina district, grossly polluted with sewage, move with the tides back and forth continuously along its water front. Water contaminated with sewage by the North Point outfall will be required to travel some two and one-half miles before reaching the Yacht Harbor.

Prior to the building of the treatment plant the periods during which the contaminated waters from North Point will be found in the vicinity of the Yacht Harbor under the recommended project will be brief and the degree of such contamination relatively small.

ONE-QUARTER CENT GASOLINE TAX FUND  
STATE HIGHWAY ROUTES WITHIN CITY

The Act passed by the State Legislature in 1933, providing for expenditure of one-quarter cent a gallon of the gasoline tax, within municipalities, was described in the last annual report. The projects approved for construction under the terms of this Act up to June 30, 1935, remain the same as for last year.

Plans for Sloat Boulevard, Thirty-ninth Avenue to Forty-second Avenue, have been completed, and construction will start soon. Plans for the other projects are progressing.

Funds now available to this City for these projects are being applied principally to the acquisition of lands. This City's apportionment for the biennium 1933-35 is \$786,967.76. The Act provides that, with the approval of the State Department of Public Works, the City may allow funds accruing to it to accumulate over a period of years, to permit the accomplishment of a major project in its entirety.

RAPID TRANSIT REPORT, 1935  
(STRUCTURES ONLY)

A report on three proposed rapid transit routes was prepared by this bureau. This program included:

A subway in Market Street from Fremont Street to Church Street, with a subway terminal loop in Fremont Street to connect with the terminal of the San Francisco-Oakland Bay Bridge Interurban Terminal Elevated - 2.49 miles.

A subway in Geary Street from Scott Street via Market Street and Montgomery Street to Columbus Avenue - 2.44 miles.

A subway in Mission Street from Eleventh Street to Thirtieth Street - 2.38 miles. A subway extension from Thirtieth Street to Bernal Avenue, thence on the surface via Bernal Avenue and the right of way of the Southern Pacific Company to Sickles Avenue - 2.95 miles.

Total length of subway	7.73	miles.
" " on surface	2.53	"
" " subway and surface	10.26	"

This report included a complete set of preliminary plans for subways and structures, with estimate of cost, but did not include tracks and appurtenances. The total program is estimated to cost \$56,000,000.

This bureau was requested to make this report because we had prepared previous subway reports, and because the engineers who were conversant with this work were still members of the staff. Furthermore, all research data and

records of sewers and other underground structures, maintained by this office, were available. The Public Utilities Commission authorized the preparation of this report, and gave us work orders to cover the cost, which amounted to \$12,100.

#### SUNSET TUNNEL REFUND

Applications for refunds were received during the year. On June 30, 1935, \$45,022.80 remained in the fund, which amount was due on 2500 parcels for which claims had not been filed.

#### RELIEF PROGRAM

The relief program in San Francisco was under the control of the Civil Works Administration from November, 1933, to April, 1934, when it was superseded by the State Emergency Relief Administration. Relief work continued under the control of the latter organization during the year, directed by this bureau.

LAGUNA HONDA HOME  
STEAM GENERATING PLANT

ADDITIONS AND ALTERATIONS

COST OF WORK:

Contractor's Bid	\$ 92,744.00
Extra Work Orders	4,765.04
Bonus for Boiler efficiency and superheat	<u>4,256.00</u>
	\$101,765.04
Credit Orders	<u>831.32</u>
Total Cost of the Work	\$100,933.72

NEW BOILER ROOM BUILDING:

The new boiler required more head room than the existing boilers, and, as it was required that the roof should be fireproof, the existing structure was torn down and replaced by a structural steel concrete structure of ample size to house the new and existing boilers. Two adjoining roofs were replaced by a reinforced concrete slab on beams and covered with tar and gravel roofing.

NEW HEATING EQUIPMENT INSTALLED:

One 400 H.P. bent water tube boiler.  
Induced draft fan for new boiler.  
Circulating water pump for water system.  
Pressure tank for circulating water system.  
Two 10,000 gallon treated water storage tanks  
for water system.  
Pressure water filter for water system.  
New reciprocating pump for tube cleaners.  
Hot water heater and storage tank.  
Return condensate tank and vent condenser.  
Air compressor, Vacuum heating pumps.  
Draft gauges, temperature recorders, steam flow recorders,  
pressure recorders and C.O<sub>2</sub> recorders, all mounted on  
a steel panel board in engine room.

PIPING ADDITIONS AND CHANGES:

A complete change was made in the hot and cold water system supplying the plant and the laundry. The new boiler was connected to the plant system of piping. A new blow-off line, and a new feed line with all fittings were installed. The main feed branches to each boiler were equipped with feed water regulators, including all cut-off and bypass valves.

Valved manifolds were installed at pumps, feed water heater, filter and softener, and main water supply. Changes were made in some of the existing piping to suit new equipment installed, or changes in the boiler room structure. All the existing piping was rehung from the new boiler room building.

#### ELECTRICAL EQUIPMENT INSTALLED:

Some old equipment belonging to the Pacific Gas and Electric Company was removed from the D.C. switchboard and replaced by new panels with switches. New panels with feeder switches were added to the A.C. switchboard. Another panel was added to the A.C. switchboard, and curve drawing ammeters and voltmeters, including phase transfer switches, were installed thereon for recording the current and voltage changes on the power and the lighting busses.

New feeders were run for the new equipment, and many changes were made in the feeder runs to conform to the new structures.

#### AUTOMATIC CONSTRUCTION CONTROLS:

The new boiler and each of the existing boilers are equipped with combustion control devices operating the up-take dampers, and controlling the draft pressure necessary for the efficient combustion of the gas fuel supplied to the burners, as required by the differential change in the steam pressure developed by the boiler.

#### MISCELLANEOUS:

The furnaces of the existing boilers were relined with 9 inches of firebrick. The outside walls and the top were cleaned and plastered with an adhesive coat, and then covered with an elastic cement.

#### THE BOILER TESTS:

The Contractor, Frederick W. Snook Co., on November 16, 1934, ran the efficiency test on the new boiler, developing 620 H.P. at 155% rating. The efficiency of the boiler corrected for humidity in air was 80.22% with 20 degrees of superheat.

The superheat test on new boiler, at 200% rating, ran the following day, recorded only an average of 1.2 degrees superheat.

The following were observed during the tests:

Average furnace temperature	2400 deg. F.
Average stack temperature	460 deg. F.
Average per cent of C O <sub>2</sub> dry flue gases	11.2 by the Orsat.
Average evaporation of 1.05# of water per cubic foot of natural gas.	

#### NECESSITY FOR NEW BOILER:

The Laguna Honda Home power plant boilers furnish steam for heating, cooking, and laundry operations, and the motive power to drive the energy generators supplying power, light and heat.

After wards "K" and "L" were completed, this added load made it necessary to operate the plant at its peak capacity.

The addition of another boiler provides adequate boiler capacity for the probable requirements of the near future and also allows for the closing down of one boiler during necessary repairs.









